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Case Report: Peritonitis in Patients with Scrub Typhus

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Abstract. Various complications have been reported in scrub typhus cases including acute respiratory distress syndrome, encephalitis, pneumonia, pericarditis, acute renal failure, and acute hepatic failure. Few studies have reported on the gastrointestinal manifestations of scrub typhus. Typical gastrointestinal manifestations in patients with scrub typhus include abdominal pain, nausea, vomiting, hematemesis, melena, and diarrhea. The two cases presented in this study are the first reported cases of peritonitis associated with scrub typhus. This study shows that scrub typhus should also be included in the differential diagnosis of peritonitis in areas where *Orientia tsutsugamushi* is endemic.

Scrub typhus is an acute febrile illness caused by *Orientia tsutsugamushi*, which is transmitted to humans through the bite of the larva of trombiculid mites. The major pathology of scrub typhus is focal or disseminated vasculitis caused by destruction of endothelial cells and organ-system dysfunction.[1,2] *Orientia tsutsugamushi* may affect the lung, heart, liver, skin, central nervous system, and gastrointestinal tract. Over one-third of patients with scrub typhus present with gastrointestinal symptoms.[3,4]

Primary intra-abdominal processes leading to secondary peritonitis are numerous, including diseases or injuries of the gastrointestinal or genitourinary tracts.[5] Peritonitis in patients with scrub typhus has never been reported. Herein, we report on two cases of peritonitis that were discovered while the patients were undergoing treatment of scrub typhus.

CASE REPORT

Case 1. A 71-year-old man, who had previously not been diagnosed with any underlying disease throughout his life, visited an emergency room on December 29, 2010. The patient complained of abdominal pain with fever, chills, and mild dyspnea that had begun 2 days earlier. His vital signs were as follows: blood pressure, 140/90 mm Hg; pulse rate, 110/min; respiration rate, 26/min; and body temperature, 37.9°C. The patient complained of abdominal direct tenderness and rebound tenderness, but not skin rash. A laboratory study revealed a white blood cell count of 13,780/mL, hemoglobin level of 14.6 g/dL, platelet count of 129,000/mL, serum creatinine of 1.29 mg/dL, aspartate aminotransferase of 70 IU/L, alanine aminotransferase of 30 IU/L, and total bilirubin of 0.66 mg/dL.

Plain abdominal erect images and pneumoperitoneum using abdominal computed tomography showed linear free air that was caused by gastric perforation. During the operation, there was a small amount of yellowish fluid collected in the peritoneal cavity and a 0.5 cm × 0.5 cm sized perforation in the anterior wall of the stomach. The disease-specific vasculitis was noted within the vessel walls.

The diagnosis of scrub typhus was validated by positive results of an indirect immunofluorescence assay and specific clinical findings. We found eschar in the left axillar (Figure 1). The patient was treated with doxycycline for scrub typhus and was administered antibiotics for peritonitis. He completely recovered after 2 weeks.

Case 2. An 84-year-old woman was referred to our hospital for evaluation of abdominal pain. She had initially been admitted to a local clinic because of flu-like symptoms 6 days previously. She was clinically diagnosed with scrub typhus and administered doxycycline for 6 days. Nearly all symptoms began to improve, but her abdominal pain became worse after the second day at the hospital. Upon admission, the patient appeared acutely ill, but her vital signs were stable. Abdominal examination revealed direct tenderness and rebound tenderness in the epigastrium. A typical eschar was observed on the lower jaw. Laboratory test results were as follows: white blood cell count, 26,000/mm^3; hemoglobin, 10.6 g/dL; platelet, 321,000/mm^3; alanine aminotransferase, 24 IU/L; aspartate aminotransferase, 22 IU/L; serum creatinine, 0.54 mg/dL; and total bilirubin, 0.54 mg/dL. A plain abdominal erect image showed linear free air, and an abdominal computed tomography showed fluid collection and free air in the gastrohepatic space that were consistent with peritonitis. During the operation, a small amount of yellowish fluid collected in the peritoneal cavity and a 1.5 cm × 1.5 cm sized perforation in the antrum of the stomach was observed. Vasculitis, which is a specific pathologic feature of scrub typhus, was noted with infiltration of lymphocytes and plasma cells within the vessel walls (Figure 2). Antibody titers against *Orientia tsutsugamushi,* using an indirect immunofluorescent antibody assay, were > 1:20,480. The patient completely recovered after 2 weeks of antibiotic therapy with doxycycline and piperacillin/tazobactam.

DISCUSSION

Scrub typhus is endemic across much of Asia and the Western Pacific region, causing substantial morbidity in these areas.[1,6] It is an acute febrile illness characterized by abrupt fever, chills, rash, lymphadenopathy, abdominal pain, myalgia, and eschar.[7] Various complications have been reported in scrub typhus cases including acute respiratory distress syndrome, encephalitis, interstitial pneumonia, myocarditis and pericarditis, acute renal failure, and acute hepatic failure.[1,8–10]

Few studies have reported on gastrointestinal manifestations of scrub typhus.[11,12] Approximately 22.7% of all patients with scrub typhus have gastrointestinal manifestations, which typically include associated abdominal pain/tenderness, indigestion, nausea, vomiting, hematemesis, melena, and diarrhea.[12]

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FIGURE 1. Eschar and skin rash on the left axilla.

Patients with scrub typhus who complained of gastrointestinal symptoms, exhibited diverse lesions in the stomach, including superficial mucosal hemorrhage, erosions, ulcers, and vascular bleeding.[12] Upper gastrointestinal bleeding associated with scrub typhus was found in 10.3% patients, and active bleeding that requires treatment with endoscopic clipping was found in 3.4%.[12] These complications result from vascular injury by vasculitis and perivasculitis in the capillaries or small arterioles.[11,12] Moreover, massive intestinal bleeding requiring surgical treatment could also occur.[11] In the present cases, peritonitis originated from gastric ulcer perforations that occurred in patients with scrub typhus. These lesions pathologically consisted of vasculitis and perivasculitis in the affected bowel wall in our patients. Other reported gastrointestinal manifestations include granulomatous hepatitis,[13] acalculous cholecystitis,[14] pancreatic abscess,[15] and hemoperitoneum.[16]

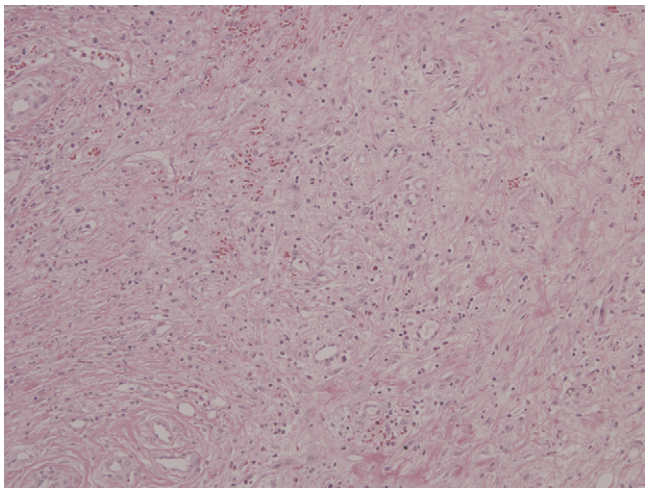

FIGURE 2. Vasculitis, a specific pathologic feature of scrub typhus, is seen with infiltration of lymphocytes and plasma cells within the vessel walls (H&E ×200).

To the best of our knowledge, the two present cases are the first reports of peritonitis associated with scrub typhus. This study indicates that scrub typhus should also be included in the differential diagnosis of peritonitis in areas where *O. tsutsugamushi* is endemic. Further studies are needed to understand the clinical characteristics of peritonitis with scrub typhus and to elucidate the pathophysiology of peritonitis in scrub typhus.

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